Appl. No. 09/681,571
Amdt. Dated 3 January 2005
Reply to Office action of 4 October 2004

Attachment

eries

gineers

anical Machines, Third

neering

ELECTROMAGNETIC AND ELECTROMECHANICAL MACHINES

Third Edition

Leander W. Matsch, Late

J. Derald Morgan
New Mexico State University

HARPER & ROW, PUBLISHERS, New York
Cambridge, Philadelphia, San Francisco,
London, Mexico City, São Paulo, Singapore, Sydney

1817

Sponsoring Editor: Peter Richardson
Project Editor: Ellen MacElree
Cover Design: Lawrence R. Didona Art & Design
Text Art: Vantage Art, Inc.
Production: Delia Tedoff
Compositor: Tapsco, Inc.
Printer and Binder: The Maple Press Company

Dedicated to:

The memory of Leand

The family of J. Deral
becca, John, Jr., and his mo

Our students, past, pre

Electromagnetic and Electromechanical Machines, Third Edition

Library of Congress Cataloging in Publication Data

Matsch, Leander W.
Electromagnetic and electromechanical machines.

Previous editions by Leander W. Matsch.
Includes bibliographies and index.
1. Electric machinery. I. Morgan J. Derald,
II. Title.
TK2182.M37 1986 621.31'042 85-16348
ISBN 0-06-044271-9

85 86 87 88 9 8 7 6 5 4 3 2 1

/ General Electric Company.)

· example, a certain 432,000-
r has a rated armature current
1940 A.

cally sinusoidal voltage under
production of good waveform
among several slots per phase
ls that span less than 180° in
g among several slots per pole
s of salient-pole rotors so that
ng in length toward the

lindrical rotors along with a
r of poles. One pole and its

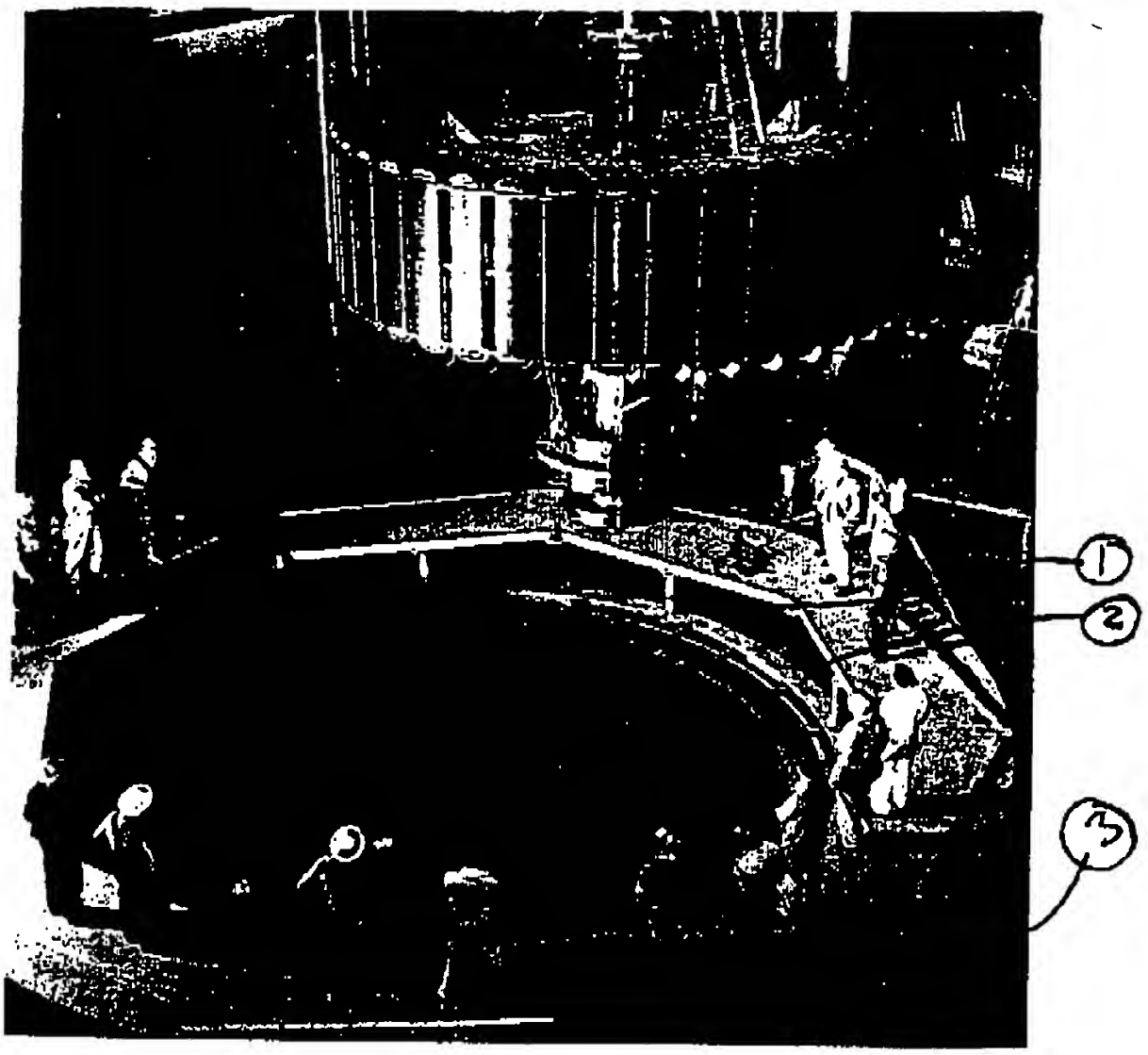

Figure 4-3 Salient-pole rotor being lowered into the stator of a hydrogenerator. (Courtesy General Electric Company.)

associated field coil of a salient-pole rotor is shown in Fig. 4-5(d). The stator slots in which the armature winding is embedded are not shown for reasons of simplicity. The approximate path taken by the field flux, not including leakage flux, is indicated by the dashed lines in Fig. 4-5(a), (b), and (d). The field coils in Fig. 4-5(c) are represented by filaments but actually (except for the insulation between turns and between the coil sides and the slot) practically fill the slot more nearly in keeping with Fig. 4-6.

The stepped curve in Fig. 4-6 represents the waveform of the mmf produced by the distributed field winding if the slots are assumed to be completely filled by the copper in the coil sides instead of containing current filaments. The shape of the mmf wave may be verified for this assumption by taking line integrals of H around appropriate paths. The sinusoid indicated by the dashed line in Fig. 4-6 represents approximately the fundamental component of the mmf wave.

The air gap in cylindrical-rotor machines is practically of uniform length